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 FEDERAL ENERGY
 REGULATORY COMMISSION

ORIGINAL

Wisconsin Public Service Corporation
 (a subsidiary of WPS Resources Corporation)
 700 North Adams Street
 P.O. Box 19002
 Green Bay, WI 54307-9002

February 27, 2002

FERC Project Nos. 2525, 2595,
 2522, 2546, 2560, & 2581

Ms. Magalie Roman Salas, Secretary
 Federal Energy Regulatory Commission
 Mail Code: DTCA, HL 21.3
 888 First Street, N.E.
 Washington, DC 20426

Dear Secretary Salas:

Peshtigo River Hydroelectric Projects 2001 Dissolved Oxygen Monitoring and Amendment Request

As per the Order Amending the Water Quality Monitoring Plans for the Caldron Falls (FERC #2525), High Falls (FERC #2595), Johnson Falls (FERC #2522), Potato Rapids (FERC #2560), and Peshtigo (FERC #2581) Hydroelectric Projects dated May 24, 2000, Wisconsin Public Service Corporation (WPSC) is providing this report of the 2001 Water Quality Monitoring Activities. The main purpose of the report per the amended monitoring plan is to provide instances when the dissolved oxygen levels in the tailwater of the projects fell below state standards.

The Caldron Falls project was in compliance with the Dissolved Oxygen standard 99.4% of the time last year, the High Falls Project 97.5%, the Johnson Falls Project 100%, the Potato Rapids Project 100%, and the Peshtigo Project 100%. During the 0.6% the Caldron Falls Project was below State Standards, data collected at the Parkway Road Bridge indicates the water entering the High Falls Reservoir was above State Standards 100% of the time. Due to the protocol and mitigation options, WPSC was able to alleviate sustained periods of dissolved oxygen levels below state standards for the 2001 monitoring season.

Minor equipment problems resulting from extreme vibrations due to turbulence in the tailwater area and lightning strikes occurred during the 2001 monitoring season. The minor equipment problems resulted in effects to the data collected at the Johnson Falls and Potato Rapids Project in the June 8, June 18, and June 28 monitoring periods. Data from the June 28 monitoring period at Johnson Falls and the June 8 monitoring period at Potato Rapids was unrecoverable. Some of the equipment problems resulted in permanent damage to the equipment, resulting in a shortage of monitoring equipment. The shortage of equipment is the reason for the absence of headwater data for the July 6 monitoring period at the Potato Rapids Project.

The Caldron Falls and High Falls hydroelectric projects experienced levels of dissolved oxygen below state standards for short durations as outlined in Appendix 1. The data records in Appendix 1 indicate periods when the dissolved oxygen concentration fell below the State Standards. In all instances, when the readings were continuously below the standards, the appropriate mitigation measures were imposed. In one instance (July 23, 2001) the hand-held supplemental data indicated levels where mitigation measures were imposed.

The entire monitoring record with calibration records for the 2001 monitoring season for the Caldron Falls, High Falls, Johnson Falls, Potato Rapids, and Peshtigo projects has been

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provided to the WDNR and the Fish and Wildlife Service (FWS) (Appendix 2). All data collected below State Standards for dissolved oxygen and dissolved oxygen data that was artificially inflated due to calibration errors greater than 0.2 mg/l has been adjusted according to calibration drift and errors identified through post calibration.

In an effort to identify drastic changes in DO levels that could occur during the seven to ten day Hydrolab placement periods, WPSC supplemented the use of continuous monitoring equipment with handheld monitor data gathering by hydro operations personnel. Hydro operations personnel sampled the monitoring location at two or three day intervals (corresponding to their scheduled work at the hydroelectric projects). The purpose of the handheld monitoring was to act as an instantaneous warning system for implementation of proposed mitigation measures when DO levels continually reached critical levels for the Caldron Falls, High Falls, Johnson Falls, Potato Rapids, and Peshtigo Projects. The supplemental data is included in Appendix 3.

The following mitigation measures were implemented during the 2001 monitoring season:

Caldron Falls

June 2001 Installed four agitators in front of the trash racks to facilitate mixing between the epilimnion and hypolimnion. Agitators were operated until September 10, 2001.

August 2, 2001 The trash sluice gate flow was increased from 28 cfs to 56 cfs. Flow remained at 56 cfs until September 10, 2001.

High Falls

June 2001 Installed five agitators in front of the trash racks to facilitate mixing between the epilimnion and hypolimnion. Agitators were operated until September 10, 2001.

July 23, 2001 The taintor gate was raised to a one-inch opening to provide an aeration flow.

July 25, 2001 The taintor gate opening was increased to two-inches due to an increase in generation flow.

August 7, 2001 Installed real-time monitor that allows for supervision of the dissolved oxygen levels on a 24-hour basis throughout the monitoring season.

September 4, 2001 Reduced the taintor gate opening to one inch.

September 10, 2001 Closed the taintor gate completely.

October 15, 2001 Began six-foot drawdown in consultation with the WDNR and FWS to attempt to alleviate diurnal fluctuations of dissolved oxygen by controlling the eurasian water milfoil population. Refill will begin after March 15, 2002.

Ms. Magalie Roman Salas, Secretary
February 27, 2002
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For the Caldron Falls Project, periods when the dissolved oxygen content fell below the State Standards are very short in duration. All of the periods, were eight hours or less in duration and did not total more than 24 hours per year.

For the High Falls Project, with the exception of one hour, all periods when the dissolved oxygen concentration fell below the State Standards occurred prior to the installation of the real-time monitor.

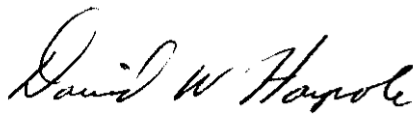
Through experiences gained in the 1999, 2000, and 2001 monitoring, WPSC has developed proposed water quality monitoring plans in consultation with the FWS and the WDNR for the Caldron Falls, High Falls, Johnson Falls, Sandstone Rapids (FERC Project No. 2546), Potato Rapids and Peshtigo Hydroelectric Projects.

WPSC formally requests amendments to the existing water quality monitoring plans. The proposed amended plans are included in Appendix 4 and are intended to supersede the existing plans. WPSC has made significant improvements to the knowledge base of water quality monitoring and conditions on the Peshtigo River. WPSC has incorporated this knowledge into the proposed plans and will continue utilizing and refining the mitigation measures in an effort of continued improvement of the water quality of the Peshtigo River system.

WPSC initiated formal consultation on the report and the amended plans with the WDNR and FWS on February 25, 2002. The WDNR responded in support of the report and amended plans and the FWS did not respond within the 30-day time period. Documentation of consultation is enclosed in Appendix 5.

Should you have any questions regarding this material, please do not hesitate to contact Shawn Puzen at (920) 433-1094 at your earliest convenience.

Sincerely,



David W. Harpole
Assistant Vice President - Energy Supply
Telephone: (920) 433-1264

Enc.

cc: Mr. Bill Bloczynski - WPSC, MERH (w/o encl.)
Mr. Greg Egtvedt - WPSC, A2 (w/o encl.)
Mr. Gil Snyder - WPSC, D2 (w/o encl.)
Ms. Joan Johaneck - WPSC, D2
Mr. Bruce Crocker - WPSC, CRI (w/o encl.)
Mr. Dennis Maki - WES

Appendix 1

Periods Below State Standards

<u>Project</u>	<u>Date</u>	<u>Start Time</u>	<u>Maximum Duration (hours)</u>
Caldron Falls	07/24/01	23:00	8.0
	07/25/01	08:00	5.0
	07/25/01	18:00	5.0
	07/26/01	20:00	1.0
High Falls			
	07/17/01	20:00	2.0
	07/18/01	20:00	9.0
	07/19/01	14:00	9.0
	07/20/01	16:00	5.0
	07/21/01	13:00	6.0
	07/21/01	20:00	4.0
	07/22/01	00:00	8.0
	07/22/01	12:00	12.0
	07/23/01	00:00	11.0
	07/23/01	20:00	4.0
	07/24/01	00:00	3.0
	07/24/01	14:00	1.0
	08/15/01	05:00	1.0

Appendix 2
Monitoring Data

Per Conversation with Robert Fletcher FERC DL&C, Full data set has been provided only to FWS and WDNR.

Appendix 3

Supplemental Hand-Held Monitoring Data

Date	Day	Caldron		High Falls		Johnson Falls	
		DO	□	DO	□	DO	□
6/1/01	Fri		14	8.3	17	8.2	16
6/4/01	Mon						
6/6/01	Wed	8.1	14	7.8	16	8.7	15
6/8/01	Fri	8.2	16	7.9	16	8.9	17
6/11/01	Mon						
6/13/01	Wed	7.5	17	7.3	16	7.5	17
6/15/01	Fri						
6/18/01	Mon			6.9	19.5		
6/20/01	Wed	7.1	18	7.3	18.5	7.4	18
6/22/01	Fri	7.2	20	7.1	20	7.3	20
6/25/01	Mon						
6/27/01	Wed	6.6	18.5	6.4	21	6.5	20
6/29/01	Fri						
7/2/01	Mon	6.5	21	5.9	21	6.9	22
7/6/01	Fri	6.0	20.5	6.4	21.5	6.9	21.5
7/9/01	Mon	6.2	22	5.9	22	5.7	22
7/11/01	Wed	6.1	21	6.1	22	6.5	22
7/13/01	Fri	6.2	22	6.4	24	6.0	22
7/16/01	Mon	6.2	22	5.4	23	6.0	22
7/18/01	Wed	5.5	21.5	5.4	23	5.9	23
7/20/01	Fri	5.5	22	5.1	23	5.3	22
7/23/01	Mon			4.5	23	5.9	24*
7/25/01	Wed	6.1	23	6.7	24		
7/27/01	Fri	5.1	22	7.9	24		
7/30/01	Mon	6.0	22.5	7.7	23		
8/1/01	Wed	5.6	22	7.3	24	6.5	23
8/3/01	Fri	5.7	24	6.1	24		
8/6/01	Mon	6.2	24				
8/8/01	Wed						
8/10/01	Fri						
8/13/01	Mon						
8/15/01	Wed	7.3	23	7.2	23	6.8	22
8/17/01	Fri	7.2	23	7.9	23	7.1	22
8/20/01	Mon	7.2	22	7.6	22	7.0	22
8/22/01	Wed	6.7	21.5	7.0	22		
8/24/01	Fri			7.3	22		
8/27/01	Mon						
8/29/01	Wed						
8/31/01	Fri						
9/4/01	Mon	6.6	21				
10/15/01	Mon	9	12	9.1	12		

Appendix 4

Proposed Water Quality Monitoring Plans

Article 409 The licensee shall file with the Commission, for approval, a plan to monitor dissolved oxygen (DO), water temperature, and pH of the Peshtigo River upstream and downstream of the Caldron Falls dam.

Water Quality Monitoring Plan

Requirement:

Ensure flow releases from the project, as measured immediately downstream from the dam, maintain the following standards, except when natural conditions prohibit attainment of the standards: (1) DO concentrations shall not be less than 5.0 milligrams per liter (Mg/L) (minus the precision of the monitoring instrument - 0.2 Mg/L for Hydrolab Brand Equipment) for more than 24 hours per year; (2) water temperature shall not exceed 89 degrees Fahrenheit; and (3) the pH shall be within the range of 6.0 to 9.0, with no change greater than 0.5 units outside the estimated natural seasonal maximum and minimum. Natural conditions include inflows to the project less than the 95 percent exceedance flow.

I. Methods

A. The monitoring parameters include, pH, dissolved oxygen, and temperature. The data is collected at one-hour intervals continuously for the months of June, July, August, and September using a Hydrolab Datasonde Equipment or equivalent. All instrumentation is cleaned, downloaded, and calibrated according to manufacturer specification every 7-10 days during the monitoring period. A post calibration is conducted to determine the calibration drift due to such factors as human error or bio-fouling. Calibration information is recorded in a maintenance log for each piece of equipment. Raw data will be adjusted assuming a linear degradation of calibration based upon a post calibration of the equipment.

II. Location and Frequency of Monitoring

A. Upstream and downstream monitoring occurs on a five-year basis. The upstream monitor is located on the upstream face of the dam and the downstream monitor is located approximately 600 feet downstream of the tailrace. The monitoring is scheduled to occur in 2006 and every five years thereafter for the term of the license.

III. Data Submittal and Review

A. When data is downloaded from the equipment, it will be screened for periods of non-compliance with the standards. If periods of non-compliance are identified,

the WDNR will be notified within five working days. The results of the monitoring will be supplied to the Wisconsin Department of Natural Resources (WDNR) and the U. S. Fish and Wildlife Service (USFWS) in a tabular format in an excel spreadsheet or equivalent.

- B. Agencies will be given 30 days for review of the results of the study. The monitoring results, agency comments and responses to agency comments will be provided to the Federal Energy Commission (FERC) by February 28th of the year following the year in which monitoring occurred.

IV. Correction of Potential Problems

- A. Through monitoring conducted in 1999, 2000, and 2001, it was determined that it is necessary to increase the flow through the sluice gate during periods of the summer. Past accurate data from 2000 and 2001 indicate all periods of low dissolved oxygen levels occur between July 15 and September 1. Therefore, annually during the period July 15 and September 1, Wisconsin Public Service Corporation (WPSC) will double the flow out of the sluice gate to 56 cfs. The continued need for enhanced sluice gate flows will be discussed on an annual basis with the WDNR and the FWS.
- B. In the summer of 2001, WPSC installed four agitating devices in front of the trash racks to provide mixing between the epilimnion and hypolimnion. Profile data indicated the best depth for installation is 11 feet from the top of the trashracks with the flow direction downward. WPSC will annually agitate the water in front of the trash racks from June 1 to September 1, to attempt to mitigate any low dissolved oxygen conditions that may occur in the tailrace. The continued need for agitation will be discussed on an annual basis with the WDNR and the FWS.

V. Documentation of Consultation

- A. Initial consultation on the design of this amended plan was conducted with the WDNR and FWS. Requests for agency comments along with responses to agency comments are included in Appendix A.

Appendix A

Documentation of Consultation

High Falls Hydroelectric Project - FERC License No. 2595

Article 406 The licensee shall file with the Commission, for approval, a plan to monitor dissolved oxygen (DO), water temperature, and pH of the Peshtigo River upstream and downstream of the High Falls dam.

Water Quality Monitoring Plan

Requirement:

Ensure flow releases from the project, as measured immediately downstream from the dam, maintain the following standards, except when natural conditions prohibit attainment of the standards: (1) DO concentrations shall not be less than 5.0 milligrams per liter (Mg/L) (minus the precision of the monitoring instrument - 0.2 Mg/L for Hydrolab Brand Equipment) for more than 24 hours per year; (2) water temperature shall not exceed 89 degrees Fahrenheit; and (3) the pH shall be within the range of 6.0 to 9.0, with no change greater than 0.5 units outside the estimated natural seasonal maximum and minimum. Natural conditions include inflows to the project less than the 95 percent exceedance flow.

I. Methods

A. The monitoring parameters include, pH, dissolved oxygen, and temperature. The data is collected at one-hour intervals continuously for the months of June, July, August, and September using a Hydrolab Datasonde Equipment or equivalent. All instrumentation is cleaned, downloaded, and calibrated according to manufacturer specification every 7-10 days during the monitoring period. A post calibration is conducted to determine the calibration drift due to such factors as human error or bio-fouling. Calibration information is recorded in a maintenance log for each piece of equipment. Raw data will be adjusted assuming a linear degradation of calibration based upon a post calibration of the equipment.

II. Location and Frequency of Monitoring

A. Upstream monitoring occurs on a five-year basis and is conducted with the same equipment utilized for the downstream monitoring of the Caldron Falls project (Approximately 600 feet downstream of the tailrace). The upstream (or downstream of Caldron Falls) monitoring is scheduled to occur in 2006 and every five years thereafter for the term of the license.

B. The downstream monitoring equipment shall be located on the concrete support below the High Falls Road Bridge near the middle of the river. Monitoring will be conducted annually. The need for future monitoring will be discussed annually in consultation with the Wisconsin Department of Natural Resources (WDNR)

and the U.S. Fish and Wildlife Service (FWS). Should the annual monitoring be unnecessary because the discharges meet the required standards, the monitoring schedule will be modified to follow a five-year protocol, which will be synchronized with the five-year monitoring schedule for the rest of the river system.

III. Data Submittal and Review

- A. When the Energy Supply and Control Desk identifies a period of non-compliance with state standards and the calibration of the instrument is verified, the WDNR will be notified within five working days. The results of the monitoring will be supplied to the Wisconsin Department of Natural Resources (WDNR) and the U. S. Fish and Wildlife Service (USFWS) in a tabular format in an excel spreadsheet or equivalent.
- B. Agencies will be given 30 days for review of the results of the study. The monitoring results, agency comments and responses to agency comments will be provided to the Federal Energy Commission (FERC) by February 28th of the year following the year in which monitoring occurred.

IV. Correction of Potential Problems

- A. Through monitoring conducted in 1999, 2000, and 2001, it was determined that diurnal fluctuations of dissolved oxygen occur during certain periods of the summer. A drawdown was initiated in November of 2001 to attempt to minimize the effects of the eurasian water milfoil colonies upon dissolved oxygen.
- B. In the summer of 2001, a real-time dissolved oxygen device was installed at the bridge below the tailrace to allow for constant monitoring of the dissolved oxygen levels in the tailrace. The output of the device is monitored by the energy supply and control desk on a 24-hour basis throughout the summer for compliance. If levels below standards are identified, corrective actions to include passing water through a spillway gate are initiated.

V. Documentation of Consultation

- A. Initial consultation on the design of this amended plan was conducted with the WDNR and FWS. Requests for agency comments along with responses to agency comments are included in Appendix A.

Appendix A

Documentation of Consultation

Johnson Falls Hydroelectric Project - FERC License No. 2522

Article 407 The licensee shall file with the Commission, for approval, a plan to monitor dissolved oxygen (DO), water temperature, and pH of the Peshtigo River upstream and downstream of the Johnson Falls dam.

Water Quality Monitoring Plan

Requirement:

Ensure flow releases from the project, as measured immediately downstream from the dam, maintain the following standards, except when natural conditions prohibit attainment of the standards: (1) DO concentrations shall not be less than 6.0 milligrams per liter (Mg/L) at any time or 7.0 Mg/L during the spawning season (minus the precision of the monitoring instrument - 0.2 Mg/L for Hydrolab Brand Equipment) for more than 24 hours per year; (2) water temperature shall not be altered from natural background to the extent that trout populations are adversely affected, and (3) the pH shall be within the range of 6.0 to 9.0, with no change greater than 0.5 units outside the estimated natural seasonal maximum and minimum. Natural conditions include inflows to the project less than the 95 percent exceedance flow.

I. Methods

- A. The monitoring parameters include, pH, dissolved oxygen, and temperature. The data is collected at one-hour intervals continuously for the months of June, July, August, September, and October using a Hydrolab Datasonde Equipment or equivalent. All instrumentation is cleaned, downloaded, and calibrated according to manufacturer specification every 7-10 days during the monitoring period. A post calibration is conducted to determine the calibration drift due to such factors as human error or bio-fouling. Calibration information is recorded in a maintenance log for each piece of equipment. Raw data will be adjusted assuming a linear degradation of calibration based upon a post calibration of the equipment.

II. Location and Frequency of Monitoring

- A. Upstream and downstream monitoring occurs on a five-year basis. The upstream monitoring is conducted with the same equipment as the downstream monitor at High Falls and the downstream monitor at Johnson Falls is located in the tailrace. Upstream monitoring will not be conducted in the month of October. The monitoring is scheduled to occur in 2006 and every five years thereafter for the term of the license.

III. Data Submittal and Review

- A. When data is downloaded from the equipment, it will be screened for periods of non-compliance with the standards. If periods of non-compliance are identified, the WDNR will be notified within five working days. The results of the monitoring will be supplied to the Wisconsin Department of Natural Resources (WDNR) and the U. S. Fish and Wildlife Service (USFWS) in a tabular format in an excel spreadsheet or equivalent.
- B. Agencies will be given 30 days for review of the results of the study. The monitoring results, agency comments and responses to agency comments will be provided to the Federal Energy Commission (FERC) by February 28th of the year following the year in which monitoring occurred.

IV. Correction of Potential Problems

- A. Correction of problems will be handled on a case-by-case basis through consultation with the WDNR and the FWS.

V. Documentation of Consultation

- A. Initial consultation on the design of this amended plan was conducted with the WDNR and FWS. Requests for agency comments along with responses to agency comments are included in Appendix A.

Appendix A

Documentation of Consultation

Sandstone Rapids Hydroelectric Project - FERC License No. 2546

Article 408 The licensee shall file with the Commission, for approval, a plan to monitor dissolved oxygen (DO), water temperature, and pH of the Peshtigo River upstream and downstream of the Sandstone Rapids dam.

Water Quality Monitoring Plan

Requirement:

Ensure flow releases from the project, as measured immediately downstream from the dam, maintain the following standards, except when natural conditions prohibit attainment of the standards: (1) DO concentrations shall not be less than 5.0 milligrams per liter (Mg/L) (minus the precision of the monitoring instrument - 0.2 Mg/L for Hydrolab Brand Equipment) for more than 24 hours per year; (2) water temperature shall not exceed 89 degrees Fahrenheit; and (3) the pH shall be within the range of 6.0 to 9.0, with no change greater than 0.5 units outside the estimated natural seasonal maximum and minimum. Natural conditions include inflows to the project less than the 95 percent exceedance flow.

I. Methods

A. The monitoring parameters include, pH, dissolved oxygen, and temperature. The data is collected at one-hour intervals continuously for the months of June, July, August, and September using a Hydrolab Datasonde Equipment or equivalent. All instrumentation is cleaned, downloaded, and calibrated according to manufacturer specification every 7-10 days during the monitoring period. A post calibration is conducted to determine the calibration drift due to such factors as human error or bio-fouling. Calibration information is recorded in a maintenance log for each piece of equipment. Raw data will be adjusted assuming a linear degradation of calibration based upon a post calibration of the equipment.

II. Location and Frequency of Monitoring

A. Upstream and downstream monitoring occurs on a five-year basis. The upstream monitoring is conducted with the same equipment as the downstream monitor at Johnson Falls and the downstream monitor at Sandstone Rapids is located in the tailrace. The monitoring is scheduled to occur in 2006 and every five years thereafter for the term of the license.

III. Data Submittal and Review

- A. When data is downloaded from the equipment, it will be screened for periods of non-compliance with the standards. If periods of non-compliance are identified, the WDNR will be notified within five working days. The results of the monitoring will be supplied to the Wisconsin Department of Natural Resources (WDNR) and the U. S. Fish and Wildlife Service (USFWS) in a tabular format in an excel spreadsheet or equivalent.
- B. Agencies will be given 30 days for review of the results of the study. The monitoring results, agency comments and responses to agency comments will be provided to the Federal Energy Commission (FERC) by February 28th of the year following the year in which monitoring occurred.

IV. Correction of Potential Problems

- A. Correction of problems will be handled on a case-by-case basis through consultation with the WDNR and the FWS.

V. Documentation of Consultation

- A. Initial consultation on the design of this amended plan was conducted with the WDNR and FWS. Requests for agency comments along with responses to agency comments are included in Appendix A.

Appendix A

Documentation of Consultation

Potato Rapids Hydroelectric Project - FERC License No. 2560

Article 406 The licensee shall file with the Commission, for approval, a plan to monitor dissolved oxygen (DO), water temperature, and pH of the Peshtigo River upstream and downstream of the Potato Rapids dam.

Water Quality Monitoring Plan

Requirement:

Ensure flow releases from the project, as measured immediately downstream from the dam, maintain the following standards, except when natural conditions prohibit attainment of the standards: (1) DO concentrations shall not be less than 5.0 milligrams per liter (Mg/L) (minus the precision of the monitoring instrument - 0.2 Mg/L for Hydrolab Brand Equipment) for more than 24 hours per year; (2) water temperature shall not exceed 89 degrees Fahrenheit; and (3) the pH shall be within the range of 6.0 to 9.0, with no change greater than 0.5 units outside the estimated natural seasonal maximum and minimum. Natural conditions include inflows to the project less than the 95 percent exceedance flow.

I. Methods

A. The monitoring parameters include, pH, dissolved oxygen, and temperature. The data is collected at one-hour intervals continuously for the months of June, July, August, and September using a Hydrolab Datasonde Equipment or equivalent. All instrumentation is cleaned, downloaded, and calibrated according to manufacturer specification every 7-10 days during the monitoring period. A post calibration is conducted to determine the calibration drift due to such factors as human error or bio-fouling. Calibration information is recorded in a maintenance log for each piece of equipment. Raw data will be adjusted assuming a linear degradation of calibration based upon a post calibration of the equipment.

II. Location and Frequency of Monitoring

A. Upstream and downstream monitoring occurs on a five-year basis. The upstream monitoring is located on the upstream face near the powerhouse and the downstream monitor is located in the tailrace below the dam. The monitoring is scheduled to occur in 2006 and every five years thereafter for the term of the license.

III. Data Submittal and Review

A. When data is downloaded from the equipment, it will be screened for periods of non-compliance with the standards. If periods of non-compliance are identified,

the WDNR will be notified within five working days. The results of the monitoring will be supplied to the Wisconsin Department of Natural Resources (WDNR) and the U. S. Fish and Wildlife Service (USFWS) in a tabular format in an excel spreadsheet or equivalent.

- B. Agencies will be given 30 days for review of the results of the study. The monitoring results, agency comments and responses to agency comments will be provided to the Federal Energy Commission (FERC) by February 28th of the year following the year in which monitoring occurred.

IV. Correction of Potential Problems

- A. Correction of problems will be handled on a case-by-case basis through consultation with the WDNR and the FWS.

V. Documentation of Consultation

- A. Initial consultation on the design of this amended plan was conducted with the WDNR and FWS. Requests for agency comments along with responses to agency comments are included in Appendix A.

Appendix A

Documentation of Consultation

Peshtigo Hydroelectric Project - FERC License No. 2581

Article 405 The licensee shall file with the Commission, for approval, a plan to monitor dissolved oxygen (DO), water temperature, and pH of the Peshtigo River upstream and downstream of the Peshtigo dam.

Water Quality Monitoring Plan

Requirement:

Ensure flow releases from the project, as measured immediately downstream from the dam, maintain the following standards, except when natural conditions prohibit attainment of the standards: (1) DO concentrations shall not be less than 5.0 milligrams per liter (Mg/L) (minus the precision of the monitoring instrument - 0.2 Mg/L for Hydrolab Brand Equipment) for more than 24 hours per year; (2) water temperature shall not exceed 89 degrees Fahrenheit; and (3) the pH shall be within the range of 6.0 to 9.0, with no change greater than 0.5 units outside the estimated natural seasonal maximum and minimum. Natural conditions include inflows to the project less than the 95 percent exceedance flow.

I. Methods

A. The monitoring parameters include, pH, dissolved oxygen, and temperature. The data is collected at one-hour intervals continuously for the months of June, July, August, and September using a Hydrolab Datasonde Equipment or equivalent. All instrumentation is cleaned, downloaded, and calibrated according to manufacturer specification every 7-10 days during the monitoring period. A post calibration is conducted to determine the calibration drift due to such factors as human error or bio-fouling. Calibration information is recorded in a maintenance log for each piece of equipment. Raw data will be adjusted assuming a linear degradation of calibration based upon a post calibration of the equipment.

II. Location and Frequency of Monitoring

A. Upstream and downstream monitoring occurs on a five-year basis. The upstream monitoring is conducted with the same equipment as the downstream monitor at Potato Rapids and the downstream monitor at Peshtigo Rapids is located in the tailrace. The monitoring is scheduled to occur in 2006 and every five years thereafter for the term of the license.

III. Data Submittal and Review

- A. When data is downloaded from the equipment, it will be screened for periods of non-compliance with the standards. If periods of non-compliance are identified, the WDNR will be notified within five working days. The results of the monitoring will be supplied to the Wisconsin Department of Natural Resources (WDNR) and the U. S. Fish and Wildlife Service (USFWS) in a tabular format in an excel spreadsheet or equivalent.
- B. Agencies will be given 30 days for review of the results of the study. The monitoring results, agency comments and responses to agency comments will be provided to the Federal Energy Commission (FERC) by February 28th of the year following the year in which monitoring occurred.

IV. Correction of Potential Problems

- A. Correction of problems will be handled on a case-by-case basis through consultation with the WDNR and the FWS.

V. Documentation of Consultation

- A. Initial consultation on the design of this amended plan was conducted with the WDNR and FWS. Requests for agency comments along with responses to agency comments are included in Appendix A.

Appendix A

Documentation of Consultation

Appendix 5
Documentation of Consultation



January 25, 2002

Wisconsin Public Service Corporation
(a subsidiary of WPS Resources Corporation)
700 North Adams Street
P.O. Box 19002
Green Bay, WI 54307-9002

FERC Project Nos. 2525, 2595,
2522, 2546, 2560, & 2581

Mr. Tom Meronek
Department of Natural Resources
101 N. Ogden Road
Peshtigo, WI 54157

Dear Mr. Meronek:

Peshtigo River Hydroelectric Projects 2001 Dissolved Oxygen Monitoring and Amendment Request

As per the Order Amending the Water Quality Monitoring Plans for the Caldron Falls (FERC #2525), High Falls (FERC #2595), Johnson Falls (FERC #2522), Potato Rapids (FERC #2560), and Peshtigo (FERC #2581) Hydroelectric Projects dated May 24, 2000, Wisconsin Public Service Corporation (WPSC) is providing this report of the 2001 Water Quality Monitoring Activities. The main purpose of the report per the amended monitoring plan is to provide instances when the dissolved oxygen levels in the tailwater of the projects fell below state standards.

The Caldron Falls project was in compliance with the Dissolved Oxygen standard 99.4% percent of the time last year, the High Falls Project 97.5%, the Johnson Falls Project 100%, the Potato Rapids Project 100%, and the Peshtigo Project 100%. During the 0.6% the Caldron Falls Project was below State Standards, data collected at the Parkway Road Bridge indicates the water entering the High Falls Reservoir was above State Standards 100% of the time. Due to the protocol and mitigation options, WPSC was able to alleviate sustained periods of dissolved oxygen levels below state standards for the 2001 monitoring season.

Minor equipment problems resulting from extreme vibrations due to turbulence in the tailwater area and lightning strikes occurred during the 2001 monitoring season. The minor equipment problems resulted in effects to the data collected at the Johnson Falls and Potato Rapids Project in the June 8, June 18, and June 28 monitoring periods. Data from the June 28 monitoring period at Johnson Falls and the June 8 monitoring period at Potato Rapids was unrecoverable. Some of the equipment problems resulted in permanent damage to the equipment, resulting in a shortage of monitoring equipment. The shortage of equipment is the reason for the absence of headwater data for the July 6 monitoring period at the Potato Rapids Project.

The Caldron Falls and High Falls hydroelectric projects experienced levels of dissolved oxygen below state standards for short durations as outlined in Appendix 1. The data records in Appendix 1 indicate periods when the dissolved oxygen concentration fell below the State Standards. In all instances, when the readings were continuously below the standards, the appropriate mitigation measures were imposed. In one instance (July 23, 2001) the hand-held supplemental data indicated levels where mitigation measures were imposed.

The entire monitoring record with calibration records for the 2001 monitoring season for the Caldron Falls, High Falls, Johnson Falls, Potato Rapids, and Peshtigo projects has been provided to the WDNR and the Fish and Wildlife Service (FWS) (Appendix 2). All data collected below State Standards for dissolved oxygen and dissolved oxygen data that was artificially inflated due to calibration errors greater than 0.2 Mg/L has been adjusted according to calibration drift and errors identified through post calibration.

In an effort to identify drastic changes in DO levels that could occur during the seven to ten day Hydrolab placement periods, WPSC supplemented the use of continuous monitoring equipment with handheld monitor data gathering by hydro operations personnel. Hydro operations personnel sampled the monitoring location at two or three day intervals (corresponding to their scheduled work at the hydroelectric projects). The purpose of the handheld monitoring was to act as an instantaneous warning system for implementation of proposed mitigation measures when DO levels continually reached critical levels for the Caldron Falls, High Falls, Johnson Falls, Potato Rapids, and Peshtigo Projects. The supplemental data is included in Appendix 3.

The following mitigation measures were implemented during the 2001 monitoring season:

Caldron Falls

June 2001

Installed four agitators in front of the trash racks to facilitate mixing between the epilimnion and hypolimnion. Agitators were operated until September 10, 2001.

August 2, 2001

The trash sluice gate flow was increased from 28 cfs to 56 cfs. Flow remained at 56 cfs until September 10, 2001.

High Falls

June 2001

Installed five agitators in front of the trash racks to facilitate mixing between the epilimnion and hypolimnion. Agitators were operated until September 10, 2001.

July 23, 2001

The taintor gate was raised to a one-inch opening to provide an aeration flow.

July 25, 2001

The taintor gate opening was increased to two-inches due to an increase in generation flow.

August 7, 2001

Installed real-time monitor that allows for supervision of the dissolved oxygen levels on a 24-hour basis throughout the monitoring season.

September 4, 2001

Reduced the taintor gate opening to one inch.

September 10, 2001

Closed the taintor gate completely.

October 15, 2001

Began six-foot drawdown in consultation with the WDNR and FWS to attempt to alleviate diurnal fluctuations of dissolved oxygen by controlling the eurAsian water milfoil population. Refill will begin after March 15, 2002.

For the Caldron Falls Project, periods when the dissolved oxygen content fell below the State Standards are very short in duration. All of the periods, were eight hours or less in duration and did not total more than 24 hours per year.

For the High Falls Project, with the exception of one hour, all periods when the dissolved oxygen concentration fell below the State Standards occurred prior to the installation of the real-time monitor.

Mr. Tom Meronek
January 25, 2002
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Through experiences gained in the 1999, 2000, and 2001 monitoring, WPSC has developed proposed water quality monitoring plans in consultation with the FWS and the WDNR for the Caldron Falls, High Falls, Johnson Falls, Sandstone Rapids (FERC Project No. 2546), Potato Rapids and Peshtigo Hydroelectric Projects.

WPSC formally requests amendments to the existing water quality monitoring plans. The proposed amended plans are included in Appendix 4 and are intended to super-cede the existing plans. WPSC has made significant improvements to the knowledge base of water quality monitoring and conditions on the Peshtigo River. WPSC has incorporated this knowledge into the proposed plans and will continue utilizing and refining the mitigation measures in an effort of continued improvement of the water quality of the Peshtigo River system.

Please provide your comments on the report and proposed amendments within 30 days. If you have any questions, please contact me at your earliest convenience.

Sincerely,



Shawn C. Puzen
Environmental Analyst
Telephone: (920) 433-1094

Enc.

cc: Mr. Bill Bloczynski - WPSC, MERH (w/o encl.)
Mr. Bob Edwards - WPSC, D2 (w/o encl.)
Mr. Greg Egtvedt - WPSC, A2 (w/o encl.)
Mr. Gil Snyder - WPSC, D2 (w/o encl.)
Ms. Joan Johaneck - WPSC, D2
Mr. Bruce Crocker - WPSC, CRI (w/o encl.)
Mr. Greg Sevener - WDNR, Peshtigo



January 25, 2002

Wisconsin Public Service Corporation
(a subsidiary of WPS Resources Corporation)
700 North Adams Street
P.O. Box 19002
Green Bay, WI 54307-9002

FERC Project Nos. 2525, 2595,
2522, 2546, 2560, & 2581

Mr. Jim Fossum
U. S. Fish and Wildlife Service
1015 Challenger Court
Green Bay, WI 54311

Dear Mr. Fossum:

Peshtigo River Hydroelectric Projects 2001 Dissolved Oxygen Monitoring and Amendment Request

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Mr. Jim Fossum
January 25, 2002
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Sincerely,



Shawn C. Puzen
Environmental Analyst
Telephone: (920) 433-1094

Enc.

cc: Mr. Bill Bloczynski - WPSC, MERH (w/o encl.)
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Ms. Joan Johaneck - WPSC, D2
Mr. Bruce Crocker - WPSC, CRI (w/o encl.)



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Scott McCallum, Governor
Darrell Bazzell, Secretary
Ronald W. Kazmierczak, Regional Director

Peshtigo Service Center
PO Box 208
101 N. Ogden Rd.
Peshtigo, Wisconsin 54157
Telephone 715-582-5052
FAX 715-582-5005

February 20, 2002

Mr. Shawn Puzen
Wisconsin Public Service Corporation
P.O. Box 19002
Green Bay, WI 54307-9002

Subject: Peshtigo River Projects Amendment Request for Water Quality Monitoring

Dear Mr. Puzen:

I have reviewed the amended water quality monitoring plans provided. The plans accurately detail our discussions, and recommendations of Wisconsin Department of Natural Resources.

Thank you for the opportunity to comment, if you have questions please call me at (715) 582-5052.

Sincerely,

Thomas G. Meronek
Fisheries Biologist

cc: Jim Fossum, USFWS
Greg Sevener, WDNR

The FWS did not respond within the 30-day comment period.